CLAIMS

1.   A reactor for detecting a target nucleic acid from a sample, comprising at least a first compartment which contains an extraction reagent composition for extracting nucleic acids from said sample, a second compartment which contains an amplification reagent composition for amplifying the target nucleic acid, a separating means for separating the first and second compartments, and an aperture which enables to introduce said sample into only said first compartment,

wherein said separating means breaks the separation of the first and second compartments by physical energy supplied from the outside of the reactor, and thereby makes it possible to mix the extraction reagent composition in said first compartment and the amplification reagent composition in said second compartment.

2.   The reactor according to claim 1, wherein said separating means comprises a water-impermeable film which can be molten by physical energy from the outside of the reactor.

3.   The reactor according to claim 2, wherein said water-impermeable film is not molten at a temperature for the extraction of nucleic acids with said extraction reagent composition, whereas the film is molten at a temperature for the amplification of the target nucleic acid with said amplification reagent composition.

4.   The reactor according to claim 1, wherein at least one of said extraction reagent composition and said amplification reagent composition are entrapped in a gel which can be molten by physical energy from the outside of the reactor.

5.   The reactor according to claim 4, wherein said gel is not molten at a temperature for the extraction of nucleic acids with said extraction reagent composition, whereas the gel is molten at a temperature for the amplification of the target nucleic acid with said amplification reagent composition.

6.   The reactor according to claim 1, further comprising a third

compartment containing a pH adjusting reagent composition for adapting the pH of said extraction reagent composition for the amplification reaction of the target nucleic acid with said amplification reagent composition, the third compartment being positioned between said first and second compartments, and separating means for separating the third compartment and said first and second compartments,

wherein said separating means breaks the separation between said first, second and third compartments by physical energy supplied from the outside of the reactor, and thereby makes it possible to mix the extraction reagent composition in said first compartment, the amplification reagent composition in said second compartment, and the pH adjusting reagent composition in said third compartment.

7. The reactor according to claim 6, wherein said separation means comprises a water-impermeable film which can be molten by physical energy from the outside of the reactor.

8. The reactor according to claim 7, wherein said water-impermeable film is not molten at a temperature for the extraction of nucleic acids with said extraction reagent composition, whereas the film is molten at a temperature for the amplification of the target nucleic acid with said amplification reagent composition.

9. The reactor according to claim 6, wherein said pH adjusting reagent composition is entrapped in a gel which can be molten by physical energy from the outside of the reactor.

10. The reactor according to claim 9, wherein said gel is not molten at a temperature for the extraction of nucleic acids with said extraction reagent composition, whereas the gel is molten at a temperature for the amplification of the target nucleic acid with said amplification reagent composition.

11. The reactor according to claim 1, wherein said extraction reagent composition is a reagent composition for alkali extraction.

12.   The reactor according to claim 1, wherein said amplification reagent composition enables amplification of a target nucleic acid under a constant temperature.

13.   The reactor according to claim 1, wherein said reactor is permeable to signals from an amplification product.

14.   The reactor according to claim 1, wherein said reactor has a part of which inner cross-sectional area decreases in the direction from the aperture to the bottom.

15.   A kit for detecting nucleic acid, comprising a reactor according to any one of claims 1 - 14 and a sampling device for collecting a sample.

16.   The kit according to claim 15, wherein said sampling device is a swab.

17.   The kit according to claim 16, wherein said swab can bring the collected sample into contact with the extraction reagent composition in said reactor and can seal the aperture of said reactor.

18.   The kit according to claim 17, further comprising a detachment preventing means for preventing the detachment of said swab from said reactor.

19.   The kit according to claim 18, wherein said detachment preventing means comprises a convex or concave portion provided on said swab and the corresponding concave or convex portion provided on said reactor.

20.   A process for detecting a target nucleic acid from a sample by using a reactor according to any one of claims 1 - 14, comprising the steps of:
(a) bringing the sample into contact with the extraction reagent composition in said reactor and extracting nucleic acids in the sample;
(b) mixing a plurality of reagent compositions in the reactor by physical energy

supplied from the outside of said reactor;

(c) conducting amplification reaction in said reactor; and

(d) detecting a signal from an amplification product.

21.   The process according to claim 20, wherein said target nucleic acid has a nucleic acid sequence specific to a wild type gene, a mutated gene or a pathogen.

22.   The process according to claim 21, wherein said pathogen is virus, bacteria, or fungi.

23.   A process of analyzing a gene by using a reactor according to any one of claims 1 - 14, comprising the steps of:

(a) bringing the sample into contact with the extraction reagent composition in said reactor and extracting nucleic acids in the sample;

(b) mixing a plurality of reagent compositions in the reactor by physical energy supplied from the outside of said reactor;

(c) conducting amplification reaction in said reactor;

(d) detecting a signal from an amplification product;

(e) inputting the detected signal into the computer for genetic analysis;

(f) in said computer, comparing said signal with information available to the computer, and thereby conducting the characterization of said signal and/or the search of information related to said signal; and

(g) outputting from said computer the characteristics of said signal and/or the information related to said signal.

24.   The process according to claim 23, wherein the input into the computer in the step (e) and the output from the computer in the step (g) are performed through a communications network.

25.   A use of the reactor according to any one of claims 1 - 14 in the diagnosis or the judgment of development risk of diseases or disorders.